

State and Local Adaptation

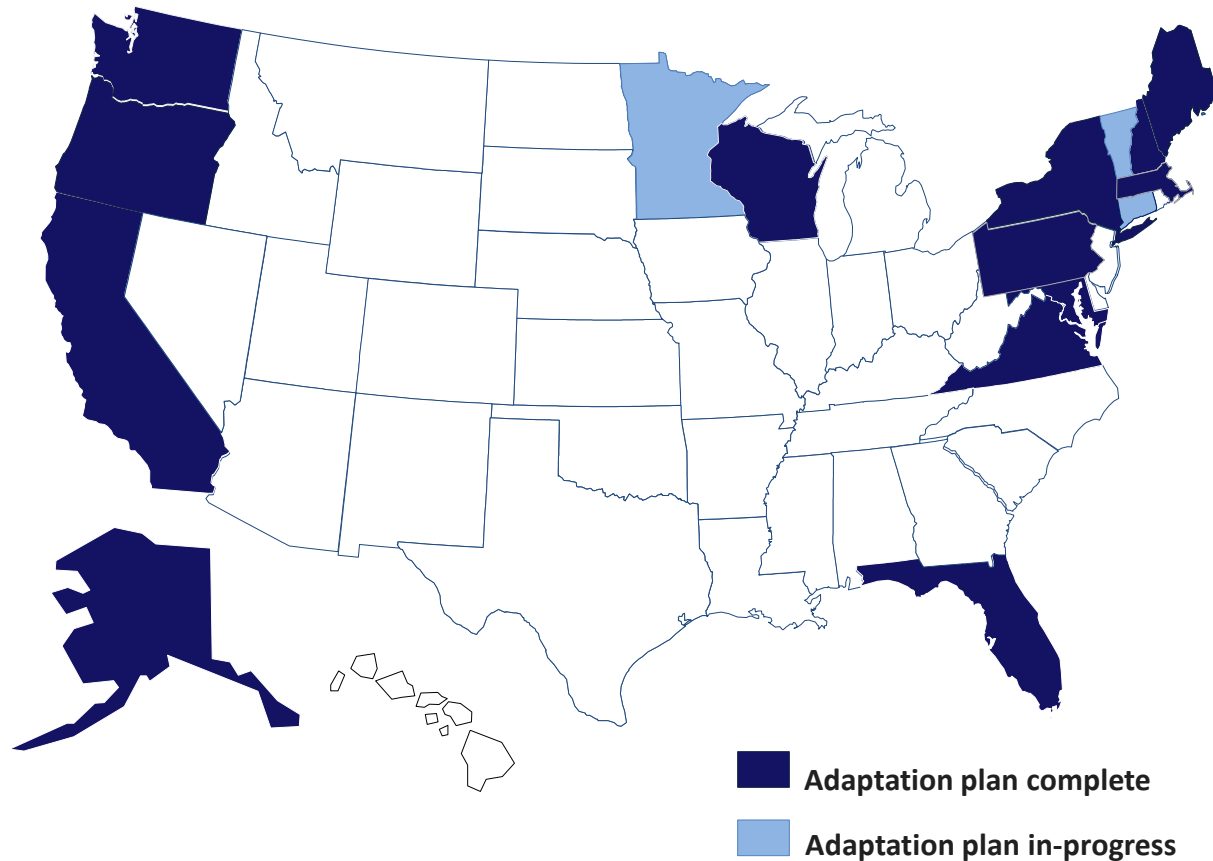
Vicki Arroyo

Executive Director

Georgetown Climate Center

National Adaptation Forum

State Adaptation Plans



Source: Vicki Arroyo & Terri Cruce, *State and Local Adaptation*, in *THE LAW OF ADAPTATION TO CLIMATE CHANGE: UNITED STATES AND INTERNATIONAL ASPECTS*, (Michael Gerrard & Katrina Kuh, eds., 2012).

Sectors Covered in State Adaptation Plans

State	Agriculture	Biodiversity / Ecosystem	Oceans / Coastal	Forestry	Emerg Prepared / Public Health	Infrastruc- ture	Water Resources
AK	✓	✓	✓	✓	✓	✓	✓
CA	✓	✓	✓	✓	✓	✓	✓
CT	✓	✓			✓	✓	
FL		✓	✓		✓	✓	✓
MA		✓	✓	✓	✓	✓	✓
MD	✓	✓	✓	✓	✓	✓	✓
ME	✓	✓	✓	✓	✓	✓	✓
MN	✓	✓			✓	✓	✓
NH	✓	✓	✓	✓	✓	✓	
NY	✓	✓	✓		✓	✓	✓
OR	✓	✓		✓	✓	✓	✓
PA	✓	✓		✓	✓	✓	✓
VA		✓	✓		✓	✓	✓
WA	✓	✓	✓	✓	✓	✓	✓
WI	✓	✓	✓	✓	✓	✓	✓

Source: Vicki Arroyo & Terri Cruce, *State and Local Adaptation, in THE LAW OF ADAPTATION TO CLIMATE CHANGE: UNITED STATES AND INTERNATIONAL ASPECTS*, (Michael Gerrard & Katrina Kuh, eds., 2012).

Authority for State Adaptation Planning

Executive Order	Legislation	Bottom-up Processes
Alaska (2010) Admin. Order No. 238	Connecticut (2011) Public Act No. 08-98	Minnesota (2009) Interagency Climate Adaptation Team
California (2005, 2008) Exec. Order No. S-03-05, S-13-08	Maine (2009) S.P. 163	Pennsylvania (2009) Unanimous Climate Change Advisory Committee Motion
Florida (2008) Exec. Order No. 07-128	Massachusetts (2011) Global Warming Solution Act, S. 2540	Wisconsin (2007) Wisconsin Initiative on Climate Change Impacts (WICCI)
Maryland (2007) Exec. Order No. 01.01.2007.07	Oregon (2007) H.B. 3543	
New Hampshire (2007) Exec. Order No. 2007-3	Washington (2009) S.B. 5560 (Codified RCW, ch. 43.21M)	
New York (2010) Exec. Order No. 24		
Vermont (2011) Exec. Order No. 05-11		
Virginia (2007) Exec. Order No. 59		

Source: Vicki Arroyo & Terri Cruce, *State and Local Adaptation, in THE LAW OF ADAPTATION TO CLIMATE CHANGE: UNITED STATES AND INTERNATIONAL ASPECTS*, (Michael Gerrard & Katrina Kuh, eds., 2012).

Louisiana Coastal Restoration Plan

State of Louisiana
The Honorable Bobby Jindal, Governor



Louisiana's Comprehensive
Master Plan for a Sustainable Coast

committed to **our coast**



Case Study: Louisiana after Katrina and Other Recent Storms

- After Hurricane Katrina, two major federal funding streams were available to Louisiana for rebuilding: FEMA Disaster Relief and HUD Community Development Block Grants (CDBG)
- CDBG funds offer greater flexibility to communities in deciding where and how to rebuild.



Hynes Elementary School in Lakeview
Source: New Orleans Times-Picayune



Primary Care Facility Site on Read Boulevard
Source: New Orleans Times-Picayune

Case Study: Vermont after Irene

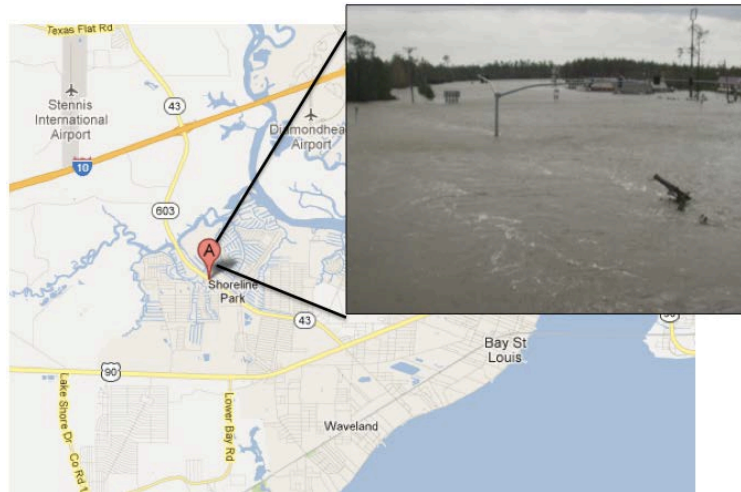
- After Tropical Storm Irene in 2005, VT rebuilt larger culverts under standards designed to promote resilience against future flooding.
- FEMA refused to reimburse for the cost of the larger culverts, citing agency Stafford Act implementing regulations.
 - *Update 3/21: FEMA granted one full reimbursement on appeal.



A culvert washed out in TS Irene and its more resilient replacement
Source: Vermont Agency of Natural Resources

Floodplain Regulation Case Study: Waveland, Mississippi

- Following Katrina's devastation in 2005, FEMA issued advisory FIRMs that extended the boundary of the 100-year floodplain inland and significantly increased base flood elevations.
- The community used the advisory FIRMs to amend their floodplain ordinance and increase their elevation requirements.



Intersection of I-10 and Hwy 43, 12 miles inland, outside the 500-year floodplain

Planning



The City of Lewes Hazard Mitigation and Climate Adaptation Action Plan



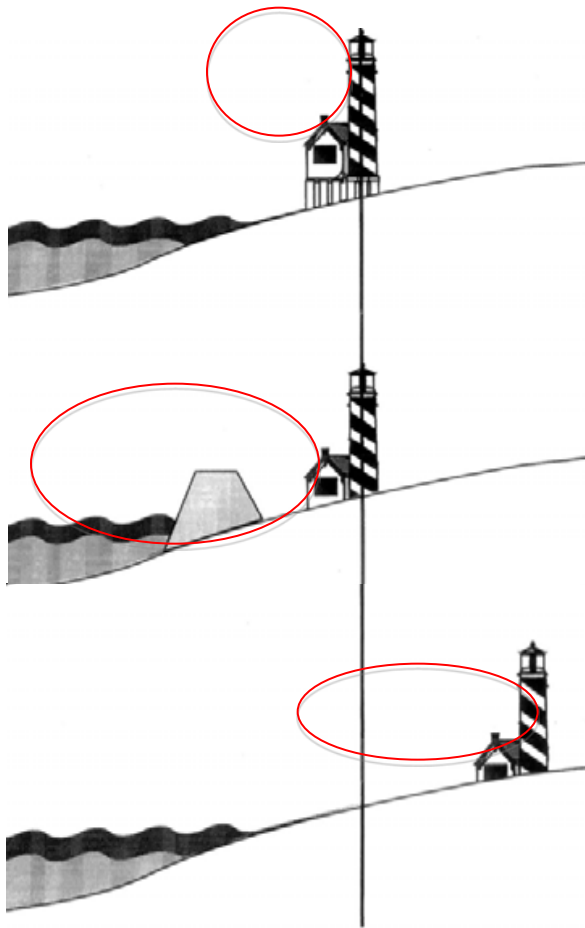
June 2011

Sea-Level Rise Tool Kit

Audience	State and Local Planners
Coastal adaptation methods	<ul style="list-style-type: none">• Accommodate• Protect• Retreat
Analysis of options	<ul style="list-style-type: none">• By adaptation method• By authority• By type of land use• By tradeoffs



SLR Tool Kit: What are my options?



Accommodate

- Flood-proofing requirements
- Elevation requirements
- Setbacks
- Buffers

Protect

- Hard-armoring permits
- Soft-armoring requirements

Retreat

- Rebuilding restrictions
- Removal requirements
- Conservation easements
- Acquisitions
- Capital Improvement Plans
- Rolling easements
- Real estate disclosures

Urban Heat Tool Kit

Audience	Local Planners
Heat adaptation methods	<ul style="list-style-type: none">• Green roofs• Cool roofs• Cool pavements• Urban forestry
Analysis of options	<ul style="list-style-type: none">• By adaptation method• By authority• By type of land use• By tradeoffs



How do I implement policies?

Milwaukee – Heat options

Department of Public Works

Already Doing

- Street Design Standards
- Landscaping Requirements
- Native Plants
- Stormwater Management Charge
- Green Projects

Could Do Today

- Minimize Traditional Pavement
- Encourage Trees Through Permitting
- Adjust Stormwater Charge

Need Additional Authority

- Expand Adjustment Policy
- Adopt Rebate Program
- Expand Green Projects

Green Roofs in Chicago

- Green roofs combine mitigation and resilience, reducing energy demand and decreasing health risk during heat emergencies



Green Roofs in Washington, DC



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